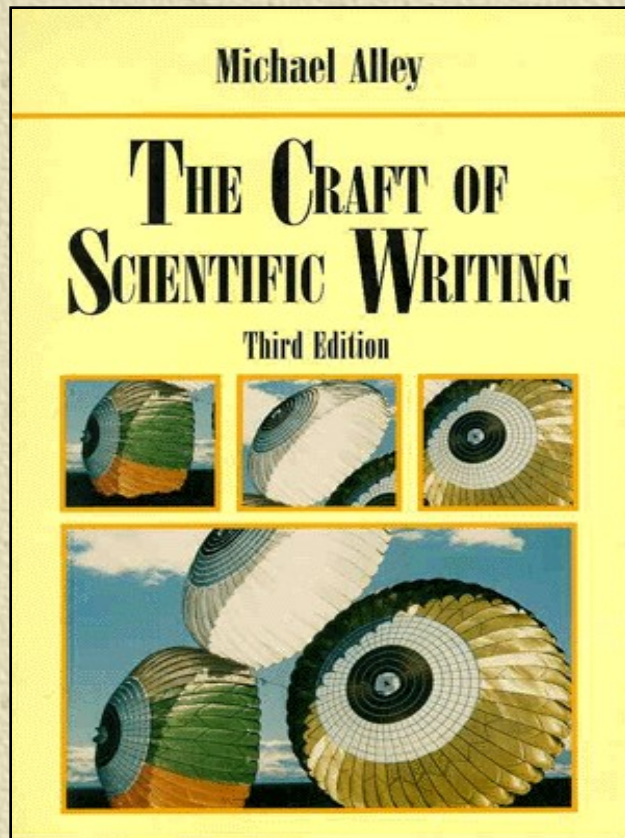# Scientific Writing: An Introduction

Adapted From The Craft of Scientific Writing, 3rd Edition, by Michael Alley

A Four Part Series
In The Basics of
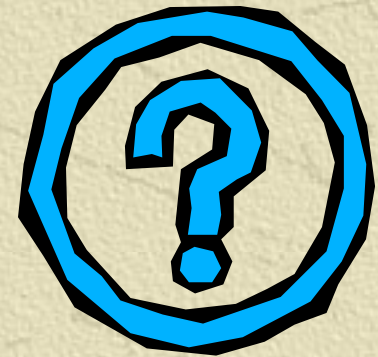Engineering
Report Writing

The Craft of Scientific Writing
3rd edition (Springer-Verlag, 1996)

The Purpose of This Presentation is to Discuss the Importance of Scientific Writing and to Introduce Some Key Principles That Can be Applied When Writing Your Engineering Reports in the Future
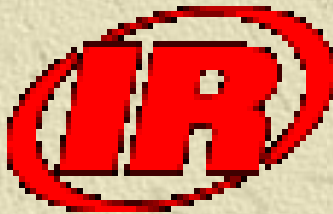

But why is it important to know these basics?

Because….

1. How Well You Communicate Affects Your Career

Survey (Richard M. Davis)
Successful engineers spent 25% of work week writing

Survey (Wisconsin)
Professional engineers found writing their most useful subject in college

Survey (Virginia Tech)
Recruiters claim that engineers need more work on their writing

2. How Well You Communicate Affects Other People's Lives

Space Shuttle Challenger

(January 28, 1986)

What Happened?

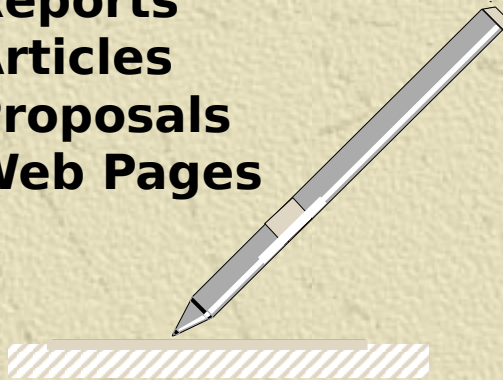**A failure to communicate...**

The fatal and catastrophic explosion was caused by failure of O-rings in the solid rocket boosters

The engineers knew of O-ring problems well before the launch of the Challenger
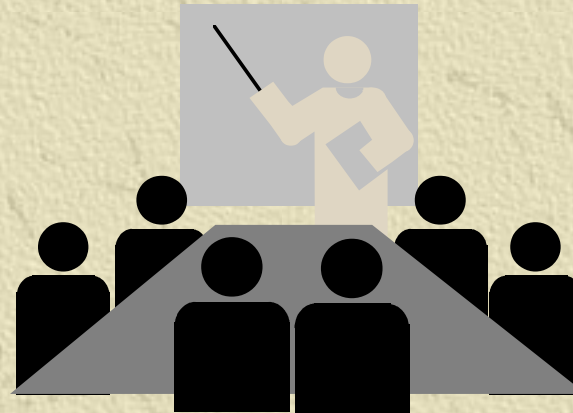
However, the engineers failed to communicate the seriousness of the problem to NASA

3. Scientists And Engineers Are Called Upon To Communicate In Many Different Situations

- **Reports**
- **Articles**
- **Proposals**
- **Web Pages**

- **Conferences**
- **Lectures**
- **Meetings**
- **Posters**

Directed Towards

Specific Technical Audiences

General Technical Audiences

Non-Technical Audiences

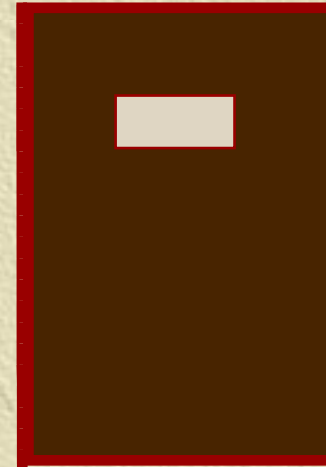# Scientific Writing Differs From Other Kinds of Writing in The Following Ways..

Subject Matter
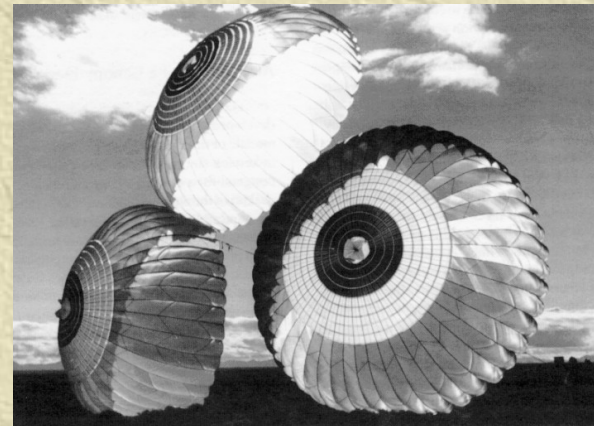

Writing Constraints
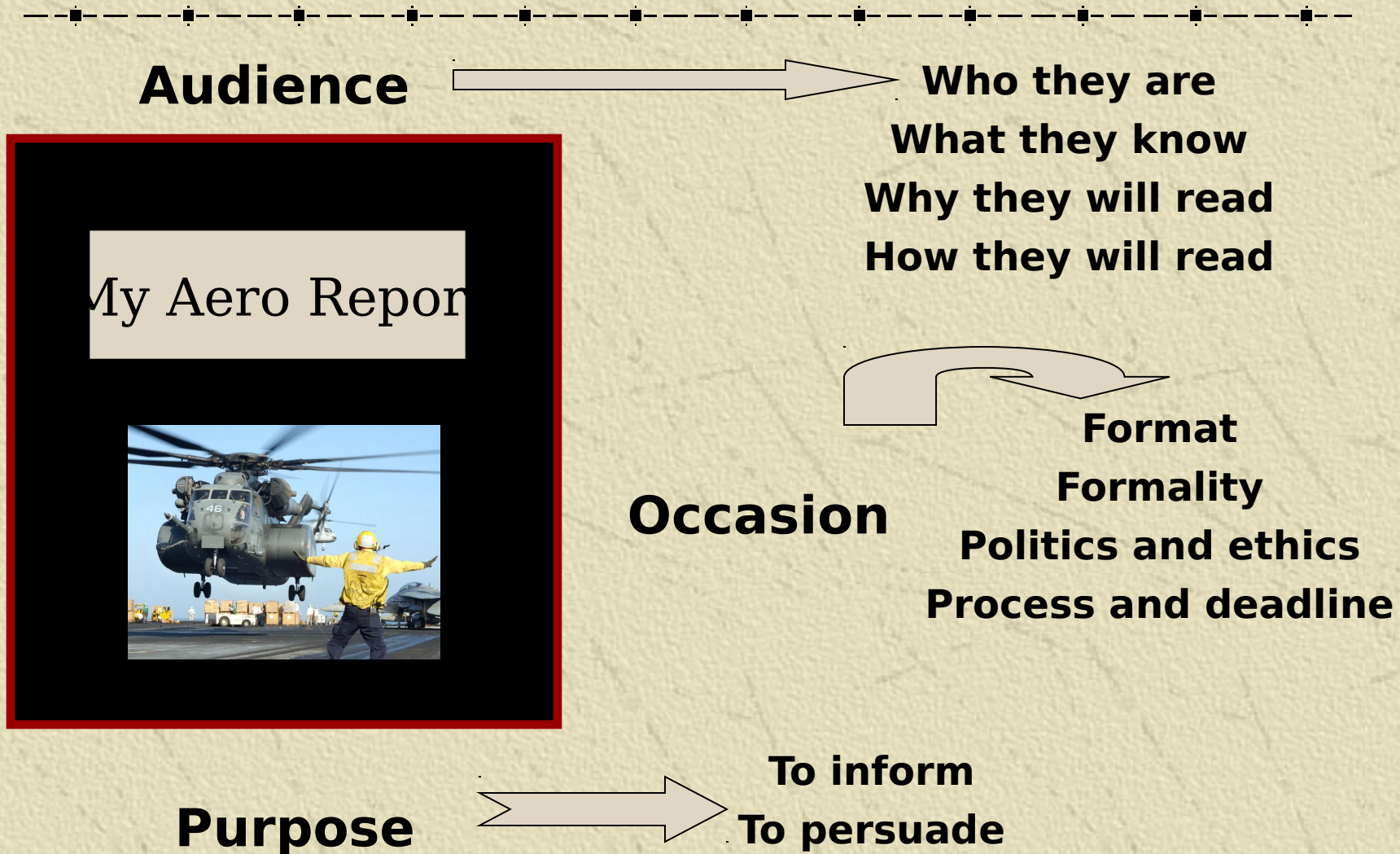
audience

purpose

occasion

Purpose of Writing

To inform ➡

To persuade ➡

Writing

Begin The Writing
Process by Analyzing Your Constraints

Audience ➡ **Who they are**
What they know
Why they will read
How they will read

My Aero Report

Occasion

Format
Formality
Politics and ethics
Process and deadline

To inform
Purpose ➡ **To persuade**

There Are Three Aspects of Writing That Affect
The Way That Readers Assess Your Report.
They Are...

My Aero Report

The Content

The Style

The Form

Content is the Substance of Your Report, and Its Subject Matter

When Writing Your Report, Make Sure You:

✳ **Include And Explain In Enough Detail All The Major Points of the Experiment**

Leave Out Any Substance That is Unnecessary To Avoid Clutter

Use Diagrams, Charts, And Other Illustrations When Necessary To Help Clarify Subject Matter

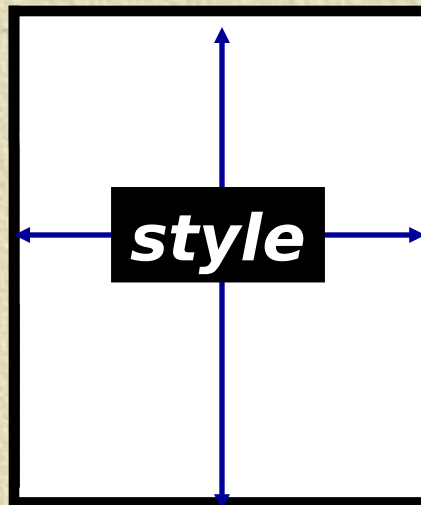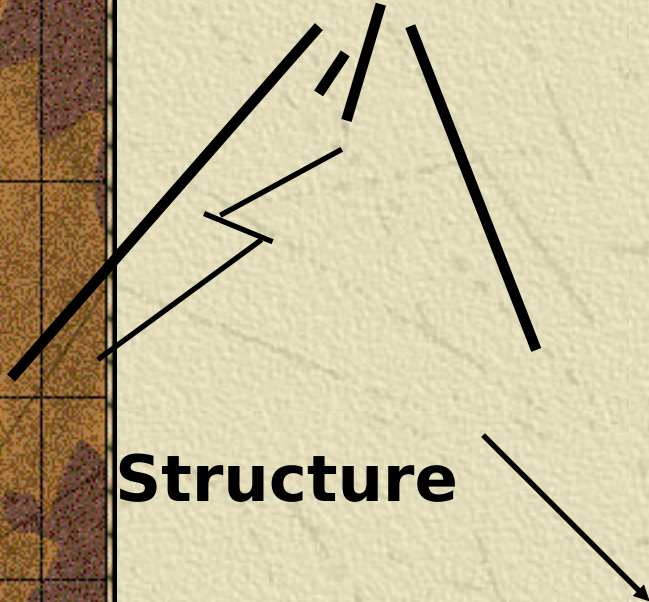# Style Is The Way You Communicate The Content To The Audience_

Structure
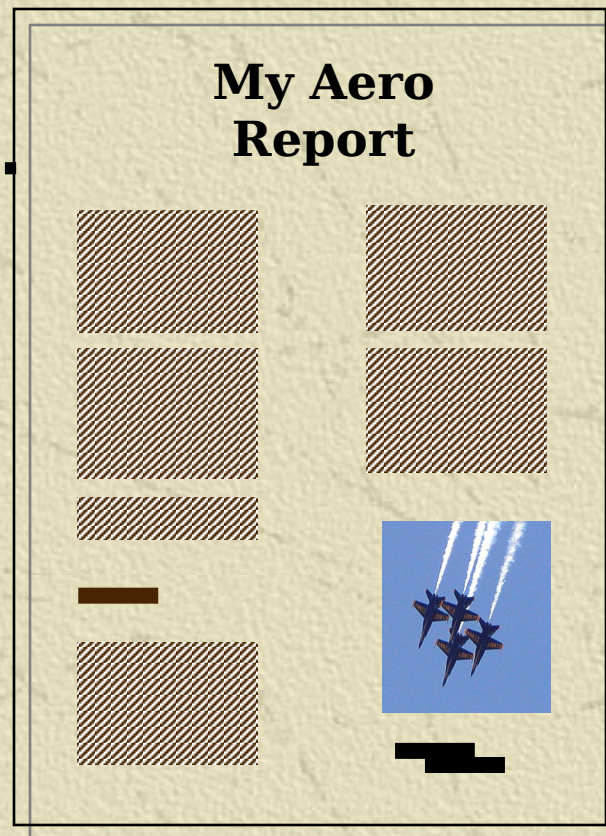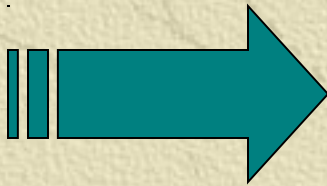
Language

style

Illustration

Form Embodies The Format and Mechanics of The Writing

Format Is The...

- Typography

- Layout

My Aero Report

Mechanics Are...

- Grammar

- Usage

- Punctuation

- Spelling

We can split the writing process into stages

Preparing

Writing the First Draft
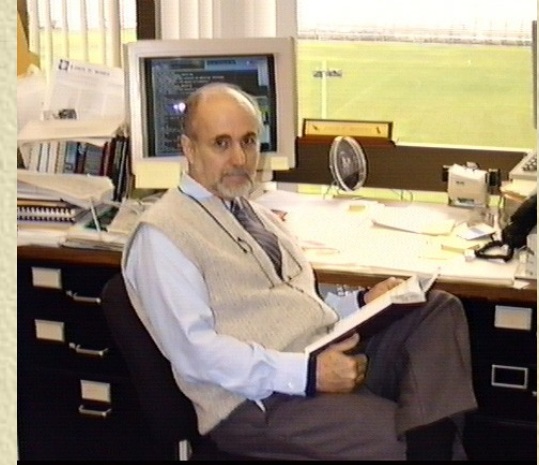

Revising, Revising, Revising

Finishing

An Excellent Way To Improve Your Writing Is To Choose Good Models
Ask Questions BEFORE You Turn In Your Report

Where Can You Get More Help?

Go To Writing Guidelines for Students At
http://www.me.vt.edu/writing/

Check Out The Aero Website

Report Writing Guide

http://web.ew.usna.edu/~aeroweb/
report_writing_giude/index.htm

Other Solid Information Sources Are...

http://publishing.grc.nasa.gov/editing/vidoli.htm
http://www.tonys.net/writingrules.htm
http://www.roma.unisa.edu.au/07118/language/reports.htm
http://odtl.dcu.ie/wp/1999/odtl-1999-03.html
http://www.comp.glam.ac.uk/pages/staff/bfjones/projman/report.htm
http://www.buseco.monash.edu.au/Faculty/Pubs/QManual/q-report.html

REMEMBER

- <u>NEVER EVER</u> Wait Until The Night Before To Try And Write an Aero or Wind Tunnel Report
  - Start <u>EARLY</u> ... Give Yourself <u>AT LEAST</u>:
  - 2 Days for Data Reduction
  - 1 Day for Writing
  - 1 Day For Going to a Professor for Editing
  - 1 Day for Final Revisions

And

** How Well You Communicate Affects Many Things** ** Scientific Writing Is Different From Other Writing **

** Make Sure To Understand What Your Content, Style, and Form

Of Your Report Will Be BEFORE You Begin Writing **

** USE Your Resources Available For Help **

** The Only Way to Learn is to ASK